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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,706	05/15/2002	Virinder Grewal	2000P1907	6354
7590 03/30/2004			EXAMINER	
Lerner & Greenberg PO Box 2480 Hollywood, FL 33020-2480			DEO, DUY VU NGUYEN	
			ART UNIT	PAPER NUMBER
			1765	
DATE MAILED: 03/30/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No. 10/031,706	Applicant(s) GREWAL ET AL.	
	Examiner DuyVu n Deo	Art Unit 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Tsai (US 5,880,033).

Tsai describes an etching method comprising: providing a reactor chamber having an upper inductive and lower capacitive means (col. 3, line 8, 9); adjusting the power setting of the upper conductive means at the range of 200-2000 Watts (col. 5, line 5-10) (this includes claimed range of 50-600 watts; therefore, it would also provide claimed a uniformity better than 10% in etching a wafer with a diameter of 8 inches at a rate of etching between 50-500 nm/min or 200-400 nm/min); the capacitor means is ranged from 100-2000 watts (col. 5, line 14-16) (this would includes claimed range within 0-200 watts), placing a wafer of 8 inches comprising polysilicon, a tungsten or titanium silicide (claimed tungsten or titanium-silicon) layer on a layer of silicon dioxide (claimed oxide) (col. 4, line 5-20; col. 9, line 1-2) into the reactor chamber (col. 5, line 35-36); plasma etching the metal silicide and polysilicon layer relative to a mask and maintaining the metal silicide, polysilicon and gate oxide where protected by the mask in order to form stacked transistor gates (claimed stacked gate array or stacked gates of MOSFETs) (col. 4, line 37-39; figure 1a-1b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai.

Referring to claims 1 and 14, Tsai doesn't describe the steps of placing and etching a 12-inch wafer. However, he describes that the apparatus can be used for etching a 12-inch wafer (col. 5, line 30-36). Therefore, it would have been obvious to one skill in the art at the time of the invention to place and etch a 12-inch wafer in light of Tsai's teaching depending on the size of the wafer being manufacturing with a reasonable expectation of success.

Referring to claims 2-4, 15 the stacked gate array comprises polysilicon, a tungsten or titanium silicide (claimed tungsten or titanium-silicon) layer on a layer of silicon dioxide (claimed oxide) (col. 4, line 5-20).

Referring to claim 5, the plasma etching comprises of feeding etching gases into the chamber and energizing the inductive and capacitive means to form plasma from the etching gases to etch the wafer (col. 5, line 1-25).

Referring to claim 7, Tsai's method would also have the reaction chamber to be ready (claimed recreating the reaction chamber) before the step of plasma etching. Otherwise, there would not be any etching.

Referring to claim 8, the etching gases include Cl₂, O₂, and N₂ (Col. 3, line 10, 11).

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Referring to claims 10 and 12, the capacitor means is ranged from 100-2000 watts (col. 5, line 14-16) (this would includes claimed range within 0-200 watts).

5. Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai as applied to claim 5 above, and further in view of Jain et al. (US 6,613,682).

Referring to claim 6, it would be desired and obvious for one skill in the art to adjust the processing parameters so that the adsorption rate is bigger than a desorption rate of gas particles on the etching surface since the gas particles have to adsorb the surface in order to etch the surface. Otherwise, there would be hardly any etching if the adsorption rate is less than the desorption rate. Furthermore, Jain shows that the processing parameters including gas flow, pressure, and temperature are result-effective variables and they are determined through experiments in order to provide optimum conditions to etch the substrate (col. 6, line 45-61).

6. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai or as applied to claims 15 and 17 above, and further in view of Lee et al. (US 5,665,203).

Tsai shows the etching gas for metal silicide comprises HCl, Cl₂, and N₂ or nitrogen-containing gases (col. 7, line 5-10, line 44, 45). Jain shows other nitrogen-containing gas is used for etching metal silicide includes NF₃ (col. 6, line 14). Tsai shows the polysilicon is etched with HCl, Cl₂, and O₂ (col. 7, line 5-10, claim 2). Unlike claimed invention, Tsai and Jain do not describe etching the polysilicon with HBr and at least Cl₂ or O₂ when approaching the gate oxide. Lee teaches a method for poly gate where the polysilicon is etched with HBr and O₂ (col. 4, line 52-55). It would have been obvious for one skill in the art to modify above prior art in light of Lee by etching the poly with HBr and O₂ because Lee teaches to use those gases to

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provide selectivity to the silicon dioxide (or gate oxide) so that it is not punched through (col. 4, line 52-63).

Response to Arguments

7. Applicant's arguments filed 2/12/04 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., Tsai doesn't teach setting the parameters for etching an 8 inch wafer, and then substituting a 12 inch wafer for the actual etching using the parameters set for the 8 inch wafer) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's arguments, the recitation of "etching a 12 inch wafer" as in claim 17 has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 88 USPQ 478, 481 (CCPA 1951).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n Deo whose telephone number is 571-272-1462. The examiner can normally be reached on 6:00-3:30; with alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DVD

3/25/04

A handwritten signature, possibly reading "Jd", is written in cursive below the date.